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Case study: Tracking mobile phones in mobility research

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Case study: Tracking mobile phones in mobility research

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Reviewers: Michael Davis (Center for the Study of Ethics in the Professions, Illinois Institute of Technology), Chuck Huff (Department of Psychology, St. Olaf College), and Matthew Keefer (Division of Educational Psychology, University of Missouri-St. Louis).

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Case (for presentation to students)

In an article published in the scientific journal *Nature* a team of researchers affiliated with a U.S. university observed that the daily movements of human beings follow “simple reproducible patterns” that can be simulated with a “single spatial probability distribution” (Gonzáles et al 2008, p. 779). Their findings are potentially significant to scientists concerned with spread of infectious diseases, traffic forecasting, emergency response, and other diffusion processes related to human mobility.

The authors base their conclusions on the movements of mobile phone users whom the authors tracked using records provided by an unidentified private telecommunications company. One set of records included the locations of the nearest cell phone tower to every call made by a sample of 100,000 mobile phone users over a six-month period. A second data set included the locations of 206 GPS-enabled mobile phones recorded every two hours for one week. Although the phone users were not informed that their locations were being tracked, the telecommunications company did disguise their records so that individuals could not be identified. Both data sets were acquired in an unidentified European country. Nonconsensual location tracking is illegal in the U.S..

Controversy ensued when *Nature* readers and news organizations learned that mobile phone users were tracked without their knowledge or consent. Authors argued that informed consent was unnecessary, since the Institutional Review Board of the agency that funded the research had determined that the study did not involve human subjects.

In response to the controversy the researchers' university has assembled a panel to review the case and recommend sanctions if necessary. You have been asked to participate in the panel as a subject matter expert on geospatial technologies.

References

Borenstein, Seth (2008). Study secretly tracks cell phone users outside US. Associated Press, June 4, 2008. Retrieved June 9, 2008, from http://news.yahoo.com/s/ap/20080604/ap_on_hi_te/tec_cell_phone_tracking

González, Marta C., Hidalgo, César A., and Barabasi, Albert-László (2008). Understanding individual human mobility patterns. *Nature* 453, 779-782.

Northeastern University (2008). Prof. Barabasi discusses groundbreaking research on human mobility in *Nature* cover story. June 6. Retrieved June 6, 2008 from http://www.research.neu.edu/news/?id=87

Smith, Kerry (2008). Mobile phones demystify commuter rat race. *Nature News,* June 4. Retrieved June 10, 2008 from http://www.nature.com/news/2008/080604/full/news.2008.874.html

DRAFT

Resources for teachers

Suggested discussion points

1. Assuming that the researchers could not identify the individuals they were tracking, was the privacy of those individuals violated?
2. The first data set included the locations of the cell towers that relayed calls from users' mobile phones. Locations of the phones (and their users) can only be inferred within the 1-3 km range of each tower. Does low-resolution location data obviate concerns about locational privacy?
3. Which of the GISCI Codes of Ethics and Rules of Conduct pertain to this case?
4. Given the definition of "human subject" established by U.S. Federal Regulations (Department of Health and Social Services, 2005) should the researchers have been required to gain informed consent of the mobile phone users?

Relevant GISCI Rule of Conduct

Section IV, Number 3: "We shall allow people to know whether they are included in a database and to see the information listed about themselves. We shall encourage them to correct any inaccurate information about themselves. We shall allow them to remove their inclusion unless prevented by law or a greater societal good."

Epilogue

[forthcoming!]

Further resources

Department of Health and Social Services, United States of America (2005). Title 45, Public Welfare, Part 46, Protection of Human Subjects. Office of Human Subjects Research, national Institutes of Health. Retrieved 17 June 2008 from http://ohsr.od.nih.gov/guidelines/45cfr46.html

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